इंटरनेट मानक

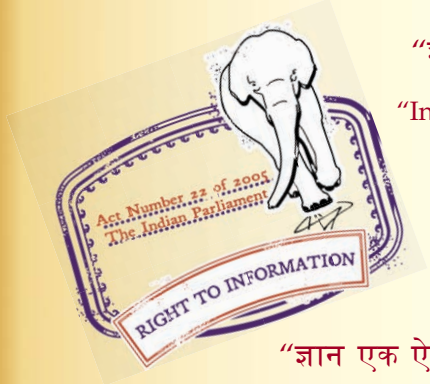
Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 10129 (2004): Hydraulic Fluid Power - Dimensions and identification code mounting flanges and shaft ends of displacement pumps and motors [PGD 16: Fluid Power]



"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

IS 10129 : 2004
ISO 3019-2 : 2001

भारतीय मानक

हाइड्रोलिक द्रव पावर — विस्थापन पम्पों और मोटरों के आरोपण फ्लैंजों तथा शाफ्ट सिरों के आयाम और पहचान कोड

(दूसरा पुनरीक्षण)

Indian Standard

HYDRAULIC FLUID POWER — DIMENSIONS AND IDENTIFICATION CODE FOR MOUNTING FLANGES AND SHAFT ENDS OF DISPLACEMENT PUMPS AND MOTORS

(Second Revision)

ICS 23.100.10

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2004

Price Group 8

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 3019-2 : 2001 'Hydraulic fluid power — Dimensions and identification code for mounting flanges and shaft ends of displacement pumps and motors — Part 2 : Metric series' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Basic Fluid Power Sectional Committee and approval of the Medical Instruments, General and Production Engineering Division Council.

This Indian Standard was first published in 1976 and was first revised in 1997 by adopting ISO 3019-2 : 1986. Consequent upon the revision of ISO 3019-2, the sectional committee dealing with the subject decided for the second revision by adopting ISO 3019-2 : 2001 as an Indian Standard.

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Pumps convert mechanical power into hydraulic fluid power, while motors convert hydraulic fluid power into mechanical power.

This Indian Standard provides:

— a minimum number of flanges and shaft sizes to cover probable present and future requirements (short and long flange spigot options are included),

— dimensional inter-changeability of flange and shaft end mountings,

— flange and spigot dimensions allowing for recommended sealing arrangements when sealing is required between a flange and its mating housing (*see* Annex A), and

— identification codes for flanges and shaft ends that can be used separately or in combination.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

CROSS REFERENCES

In the adopted standard reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 261 : 1998 ISO general-purpose metric screw threads — General plan	IS 4218 (Part 2) : 2001 ISO general purpose metric screw threads: Part 2 General plan (*second revision*)	Identical
ISO 286-2 : 1988 ISO system of limits and fits — Part 2 : Tables of standard tolerance grades and limit deviations for holes and shafts	IS 919 (Part 2) : 1993 ISO systems of limits and fits: Part 2 Tables of standard tolerance grades and limit deviations for holes and shafts (*first revision*)	do

(*Continued on third cover*)

Indian Standard

HYDRAULIC FLUID POWER — DIMENSIONS AND IDENTIFICATION CODE FOR MOUNTING FLANGES AND SHAFT ENDS OF DISPLACEMENT PUMPS AND MOTORS

(Second Revision)

1 Scope

This part of ISO 3019 establishes a metric series of mounting flanges and shaft ends for positive-displacement, rotary hydraulic fluid power pumps and motors. It specifies sizes and dimensions and establishes an identification code for two- and four-bolt, and polygonal (including circular), mounting flanges, as well as for cylindrical keyed shaft ends, conical keyed shaft ends with an external thread and metric involute spline shaft ends.

NOTE Involute spline is in accordance with DIN 5480 [1]...[8].

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 3019. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 3019 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 261:1998, *ISO general-purpose metric screw threads — General plan.*

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 1101:—[1], *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out.*

ISO 3912:1977, *Woodruff keys and keyways.*

ISO 5598, *Fluid power systems and components — Vocabulary.*

3 Terms and definitions

For the purposes of this part of ISO 3019, the terms and definitions given in ISO 5598 apply.

4 Dimensions

4.1 Tolerances

Dimensions shown without tolerances are nominal.

Tolerances of form and position are shown in accordance with ISO 1101.

4.2 Selection of mounting flanges and shaft ends

4.2.1 General

Selection of mounting flange (4.2.2) and shaft end (4.2.3) dimensions for pumps and motors manufactured in accordance with this part of ISO 3019 shall be according to Tables 1 to 6 and Figures 1 to 6.

For the dimensions of cylindrical keyed shaft ends without internal thread, conical shaft ends with external thread and metric involute spline shaft ends, see Figures 4, 5 and 6, and Tables 7, 8 and 9, respectively.

4.2.2 Mounting flanges

Select mounting flanges according to the following.

— For two-bolt mounting flanges, choose from Table 4, see Figure 1.

— For four-bolt mounting flanges, choose from Table 5, see Figure 2.

— For polygonal (including circular) mounting flanges, choose from Table 6, see Figure 3.

— Avoid, whenever possible, the non-preferred series of two- and four-bolt mounting flanges identified in Tables 1, 4 and 5.

---

1) To be published. (Revision of ISO 1101:1983)

4.2.3 Shaft ends

4.2.3.1 Nominal shaft end diameter, D (see Figure 4 and Figure 5), in relation to flange spigot diameter, A, shall be selected from Table 1 or 2, depending on the type of mounting flange.

Table 1 — Series of shaft ends for two- and four-bolt mounting flanges

Dimensions in millimetres

Flange spigot A	Shaft end D		
	1st choice	2nd choice	Non-preferred
32	10	—	—
40	12	—	—
50	12	16	10
63	16	20	12
80	20	25	16
100	25	32	20
125	32	40	25
140 [a]	32	40	25
160	40	50	32
180 [a]	40	50	32
200	50	63/60 [b]	40
224 [a]	50	63/60 [b]	40
250	63/60[b]	80	50

For applications such as those involving high torque or heavy side loads, other shaft dimensions may be selected.

[a] Non-preferred flange spigot dimensions.

[b] Reference diameter for spline shaft.

Table 2 — Series of shaft ends for polygonal mounting flanges

Dimensions in millimetres

Flange spigot *A*	Shaft end *D*		
	1st choice	2nd choice	Non-preferred
80	20	25	16
100	25	32	20
125	32	40	25
160	40	50	32
180	40	50	32
200	50	63	40
224	50	63	40
250	63	70	50
280	63	80	—
315	70	80	—
355	70	80	—
400	80	90	—
450	90	110	—
500	90	110	—
560	110	125/120 [a]	—
630	125/120 [a]	140	—
710	140	160	—
800	160	180	—
900	160	180	—
1 000	180	200	—
For applications such as those involving high torque or heavy side loads, other shaft dimensions may be selected.			
[a] Reference diameter for spline shaft.			

4.2.3.2 The shaft end shape shall be of one of the following types:

a) cylindrical keyed shaft end (see Figure 4),

b) conical keyed shaft end with external thread (see Figure 5), or

c) metric involute spline shaft end (see Figure 6).

For the nominal shaft end diameter, D, select the module of involute spline shaft end and the corresponding number of teeth with respect to the reference diameter from Table 3.

Shaft ends a) and c) may be provided with a tapped hole.

4.2.3.3 Only parallel or Woodruff keys in accordance with ISO 3912 shall be used.

4.2.3.4 For the first and second choices, select shaft end lengths L_L, L_S and L_{ST} from the short series, except for conical shaft ends of nominal diameters 10 and 12, for which the long series only is available.

For the non-preferred series, select the shaft end lengths L_L, L_S and L_{ST} from the long series.

On conical shaft ends, the length of the conical surface may exceed L_{ST} towards the mounting flange, provided D is located at L_{ST}.

Table 3 — Compatible metric involute spline shaft ends

Shaft end reference diameter d_B mm	Module					Number of teeth		Min. shaft diameter [a] U_{min} mm	
	0,8	1,25	2	3	5	●	○	●	○
10	●					11	—	7,6	—
12	●					13	—	9,6	—
16		●				11	—	12,4	—
20		●				14	—	16,4	—
25		●				18	—	21,4	—
32			●			14	—	26,4	—
40			●	○		18	12	34,4	31,8
50			●	○		24	15	44,4	41,8
60			●	○		28	18	54,4	51,7
70				●		22	—	61,7	—
80				●		25	—	71,7	—
90				●	○	28	16	81,7	76,4
110				●	○	35	20	101,7	96,4
120				●	○	38	22	111,7	106,4
140				●	○	45	26	131,7	126,4
160					●	30	—	146,4	—
180					●	34	—	166,4	—
200					●	38	—	186,4	—

● Preferred module/series.

○ Non-preferred module/series.

[a] See Figure 6.

4.3 Mating components

The dimensions and related tolerances of the mating components shall be compatible with the dimensions and tolerances specified in this part of ISO 3019, thus avoiding undue body strain as well as transverse loads on shafts in excess of those permitted by the pump or motor manufacturer.

5 Identification code

5.1 Mounting flanges

When identifying mounting flanges in accordance with this part of ISO 3019, the following code shall be used.

a) Use the term "Flange".

b) Refer to this part of ISO 3019: ISO 3019-2.

c) Indicate the size reference of the flange by stating the spigot diameter, A, in millimetres.

d) Indicate the flange shape:

— two-bolt mounting flange: A;

— four-bolt mounting flange: B;

— polygonal mounting flange (including circular flange): D.

e) Indicate the number of fixing holes: 2 to 14.

f) Indicate the kinds of holes or slots:

— clearance holes (preferred): H;

— tapped holes (non-preferred): T;

— slots: S.

g) Indicate the spigot version:

— short spigot: W;

— long spigot: L.

When both a flange and shaft are coded jointly, this indication should be omitted from the code.

See 5.3 for designation examples.

5.2 Shaft ends

When identifying shaft ends in accordance with this part of ISO 3019, the following code shall be used.

a) Use the term "Shaft ends".

b) Refer to this part of ISO 3019: ISO 3019-2.

c) Indicate the shape of the shaft end:

— cylindrical keyed shaft end, but without internal thread: E;

— conical keyed shaft end with external thread: F;

— cylindrical keyed shaft end with internal thread (non-preferred): G;

— metric involute spline shaft end according to Table 3: P.

d) Indicate the size reference of the shaft by using the nominal diameter, D, in millimetres.

e) Indicate the shaft end length:

— short shaft end: N;

— long shaft end: M.

See 5.3 for designation examples.

5.3 Designation examples

EXAMPLE 1 A four-bolt mounting flange of spigot diameter 100 mm, having a short spigot with clearance holes:

Flange ISO 3019-2 - 100B4HW

EXAMPLE 2 A conical shaft end, with external thread, of nominal diameter (D) 32 mm, short series:

Shaft end ISO 3019-2 - F32N

EXAMPLE 3 The combination of both elements designated in the above examples:

Flange and shaft end ISO 3019-2 - 100B4HW - F32N

6 Flange/shaft end concentricity and perpendicularity

Maintain flange or shaft end concentricity and perpendicularity within the limits shown in Figures 1 to 3 and given in Tables 4 to 6.

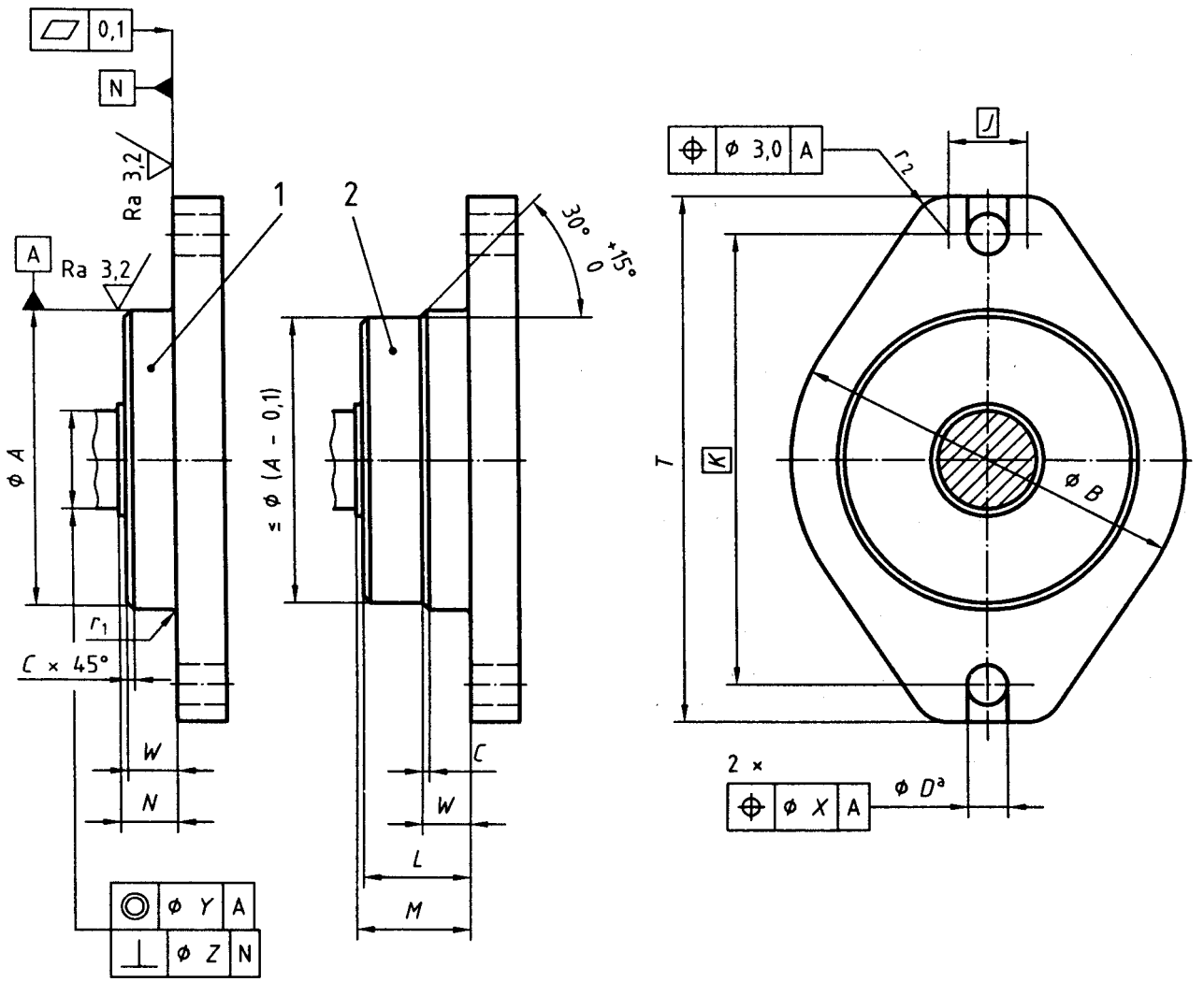
NOTE Rigid couplings may require closer tolerances.

7 Identification statement (Reference to this part of ISO 3019)

It is strongly recommended that manufacturers use the following statement in test reports, catalogues and sales literature when electing to comply with this part of ISO 3019:

"Dimensions and identification code for mounting flanges and shaft ends in accordance with ISO 3019-2:2001, *Hydraulic fluid power — Dimensions and identification code for mounting flanges and shaft ends of displacement pumps and motors — Part 2: Metric series.*"

Dimensions in millimetres,
surface roughness values in micrometres



Key

1 Short spigot version

2 Long spigot version

a Slots or threaded holes may be used instead of holes.

Figure 1 — Basic layout of two-bolt mounting flanges

Table 4 — Dimensions of two-bolt mounting flanges

Dimensions in millimetres

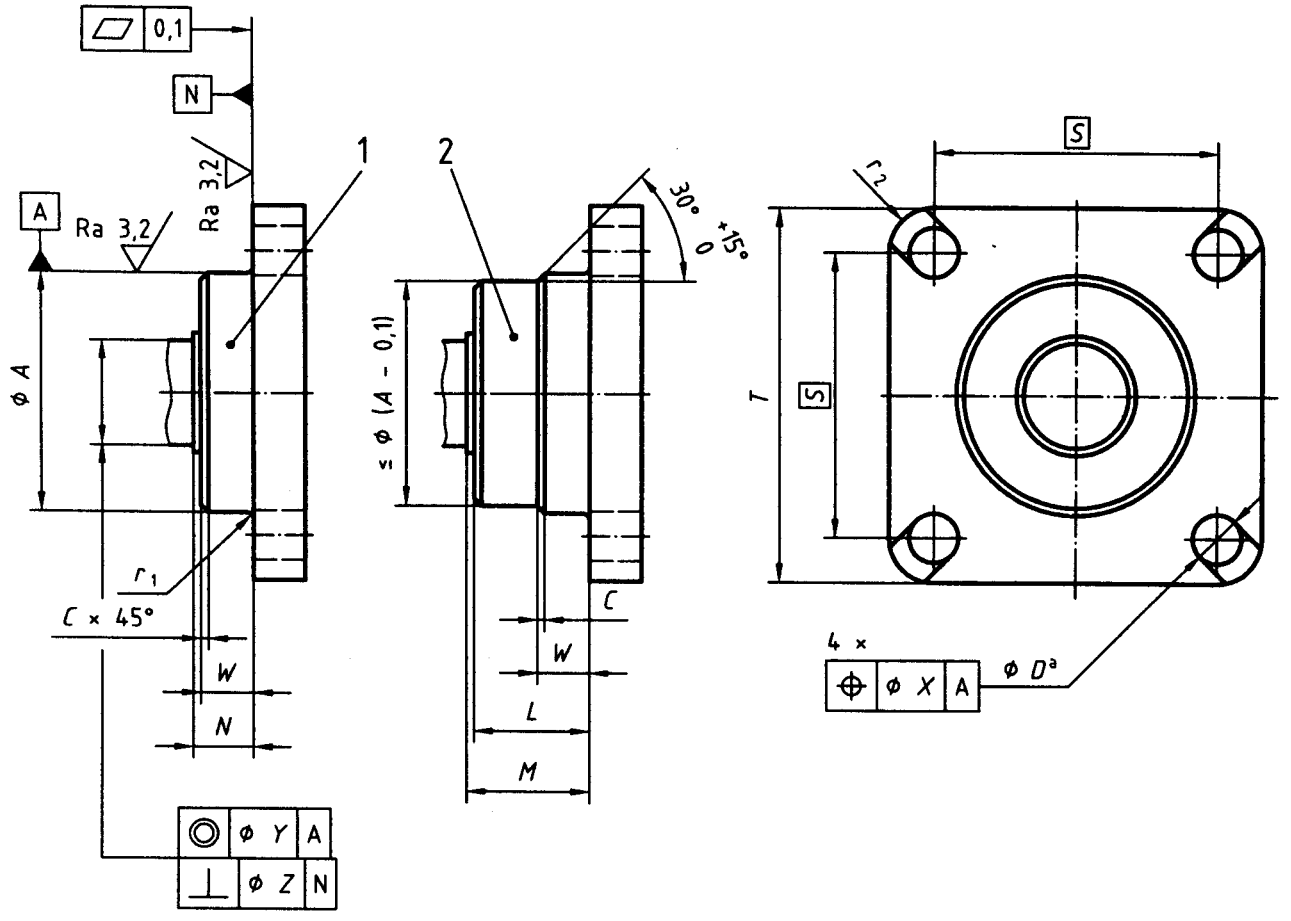
Pilot dimensions									Flange dimensions								
A	W	N Flange spigot (short)	L	M Flange spigot (long)	C	r_1	Y^b	Z^b	B		J	K	D		X	T		r_2
								mm/mm					2 bolts	Clear holes				
h8	$^{+0,5}_{0}$	$^{+0,1}_{0}$	max.		max.	max.				tol.			Thread	H13			tol.	max.
32	7	8	15,5	16^{+1}_{0}	1,5	0,5	0,2	0,001 5	50	± 0,5	8	56	M6	6,6	0,3	72	± 0,5	8
40									56		10	63				79		
50			19,5	20^{+1}_{0}					65		12	80	M8	9	0,5	100		10
63									80		14	100				120		
80							0,25		100		18	109	M10	11		133		12
100	9	10	24,5	25^{+1}_{0}	2	1,6	0,3	0,002	125		20	140	M12	13,5	0,75	168		14
125			31,5	32^{+1}_{0}			0,35		150	± 1,5	24	180	M16	17,5		216	± 1,5	18
140 [a]									170		34	200			1	236		
160			39,5	40^{+1}_{0}					200		42	224	M20	22		268		22
180 [a]									212		52	250				294		
200			49,5	$50^{+1,2}_{0}$					236		56	280	M24	26		332		26

NOTE For tolerance values, see ISO 286-2.

[a] Non-preferred size.

[b] Tolerances stated are for the unloaded condition. (Rigid couplings may require tighter tolerances.)

Dimensions in millimetres,
surface roughness values in micrometres



Key

1 Short spigot version

2 Long spigot version

a Slots or threaded holes may be used instead of holes.

Figure 2 — Basic layout of four-bolt mounting flanges

Table 5 — Dimensions of four-bolt mounting flanges

Dimensions in millimetres

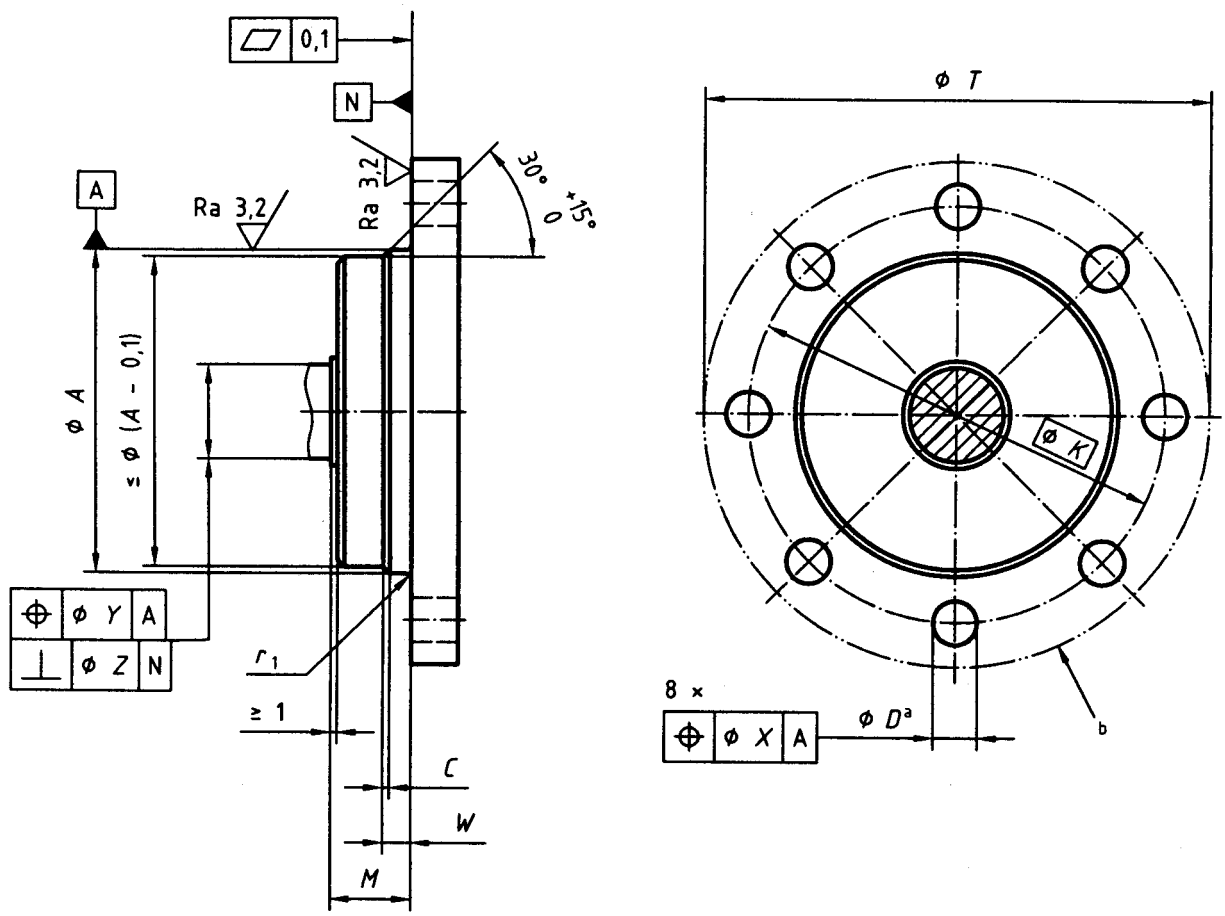
Pilot dimensions									Flange dimensions					
A	W	N Flange spigot (short)	L	M Flange spigot (long)	C	r_1	Y [b]	Z [b] mm/mm	S	D 4 bolts Thread	D Clear holes H13	X	T	r_2
h8	$^{+0,5}_{0}$	$^{+0,1}_{0}$	max.		max.	max.							max.	
63	7	8	19,5	20^{+1}_{0}	1,5	0,5	0,2	0,001 5	60,1	M8	9	0,5	80	10
80							0,25		72,8				100	
100	9	10	24,5	25^{+1}_{0}	2	1,6	0,3		88,4	M10	11		125	16
125			31,5	32^{+1}_{0}			0,35	0,002	113,2	M12	13,5	0,75	150	18
140 [a]									127,3				170	
160			39,5	40^{+1}_{0}					141,4	M16	17,5		190	22
180 [a]									158,4			1	212	
200			49,5	$50^{+1,2}_{0}$			0,4		176,8	M20	22		236	24
224 [a]									198				266	
250									222,8	M24	26		301	2

NOTE For tolerance values, see ISO 286-2.

[a] Non-preferred size.

[b] Tolerances stated are for the unloaded condition. (Rigid couplings may require tighter tolerances.)

Dimensions in millimetres,
surface roughness values in micrometres



a Slots or threaded holes may be used instead of holes.

b Circular envelope.

Figure 3 — Basic layout of polygonal mounting flanges

Table 6 — Dimensions of polygonal mounting flanges

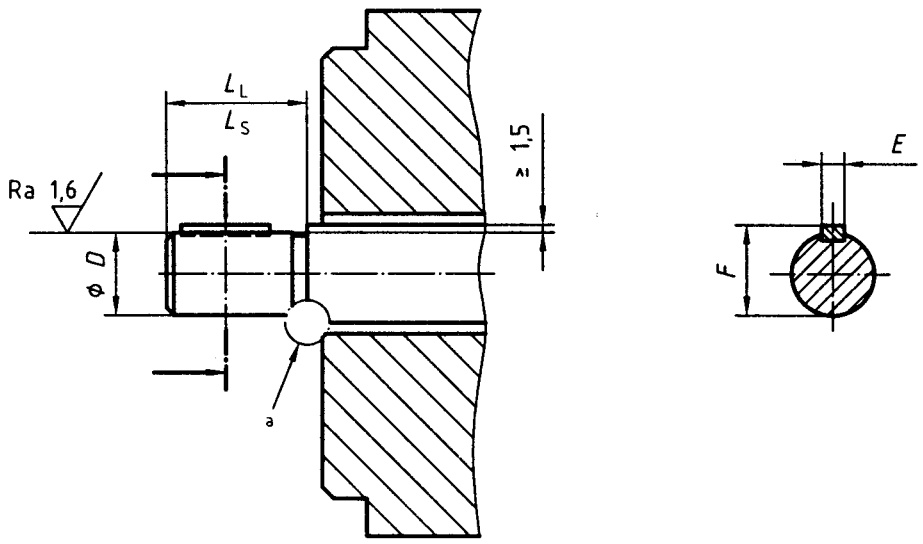
Dimensions in millimetres

Pilot dimensions							Flange dimensions					
A	W	M	C	r_1	Y[a]	Z[a]	K	D			X	T
								Bolts		Clear holes		
h8			max.			mm/mm		Quantity	Thread	H13		max.
80	$7^{+0,5}_{0}$	20 ± 0,8	2	0,5	0,25	0,001 5	103	5, 6 7 or 8	M8	9	0,5	125
100				1,6	0,3		125		M10	11		160
125	$9^{+0,5}_{0}$	25 ± 0,8			0,35	0,002	160		M12	13,5		200
160							200		M16	17,5	1	250
180		40 ± 0,8					224					280
200							250		M20	22		300
224							280					335
250		50 ± 1					300					355
280	16^{+1}_{0}		3				320					375
315							360					425
355							400					465
400							450					515
450		60 ± 1,5	5				510	5, 7 8, 10 12 or 14	M24	26		585
500	20^{+1}_{0}						560					635
560							630					710
630							710		M30	33	1,5	800
710							800					900
800							900					1 000
900							1 000					1 100
1 000							1 100					1 200

NOTE For tolerance values, see ISO 286-2.

[a] Tolerances stated are for the unloaded condition. (Rigid couplings may require tighter tolerances.)

Dimensions in millimetres,
surface roughness values in micrometres



a At the option of the manufacturer.

Figure 4 — Basic layout of cylindrical keyed shaft ends without internal thread

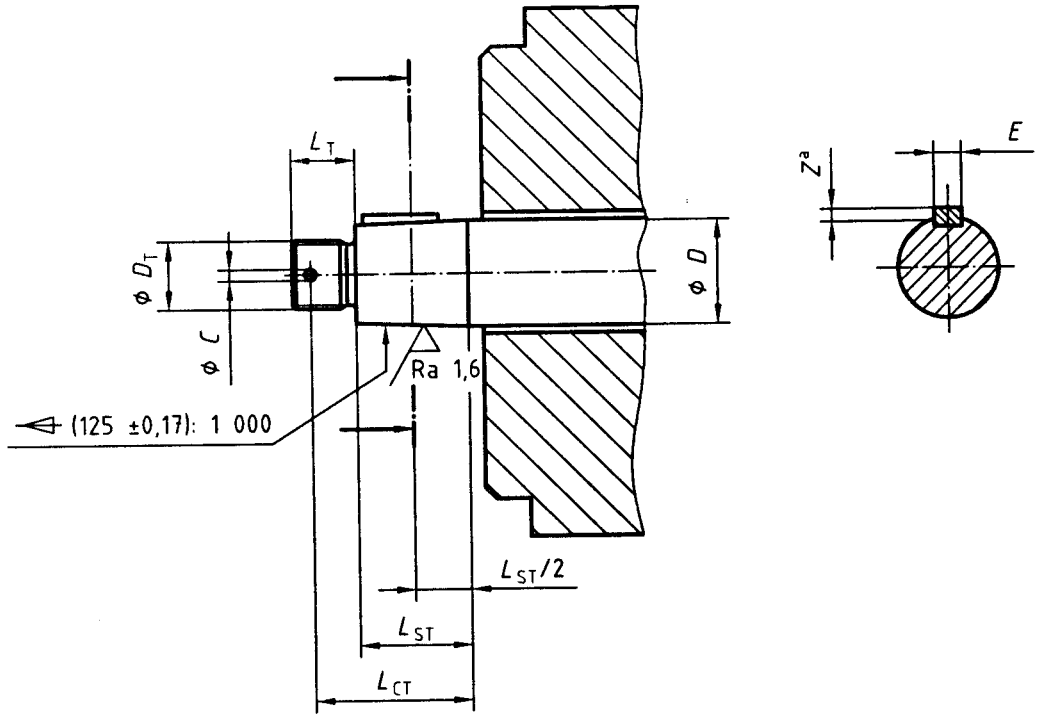
Table 7 — Dimensions of cylindrical keyed shaft ends without internal thread

Dimensions in millimetres

D nom.	D tol.	E Key width h9	F	L_L Long	L_S Short
10	j7	3	11,2	23	20
12		4	13,5	30	25
16		5	18	40	28
20		6	22,5	50	36
25		8	28	60	42
32	k7	10	35	80	58
40		12	43	110	82
50		14	53,5	110	82
63	m7	18	67	140	105
70		20	74,5	140	105
80		22	85	170	130
90		25	95	170	130
110		28	116	210	165
125		32	132	210	165
140		36	148	250	200
160		40	169	300	240
180		45	190	300	240
200		45	210	350	280

NOTE For tolerance values, see ISO 286-2.

Dimensions in millimetres,
surface roughness values in micrometres



a Dimension Z is normal to the key and at the large end of the taper.

Figure 5 — Basic layout of conical keyed shaft ends with external thread

Table 8 — Dimensions of conical keyed shaft ends with external thread

Dimensions in millimetres

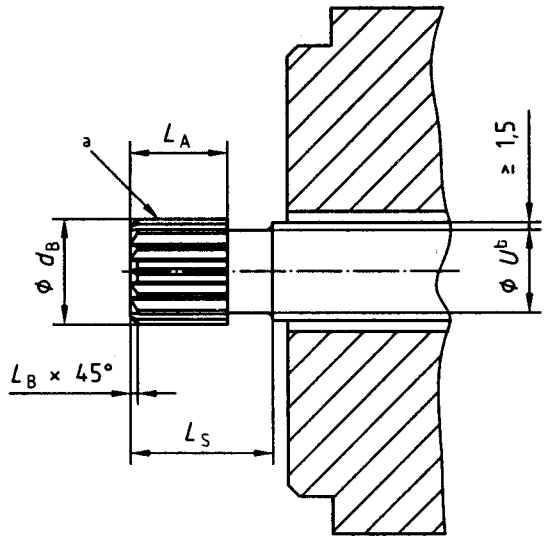
D	L_{CT}		L_{ST}		L_T	C	D_T [a]	E	Z
	Shaft end							Key width	
	short	long	short	long		+ 0,13 − 0,08		h9	
10	—	20	—	15	8 [b]	1,6	M6 [b]	—	—
12	—	24,5	—	18	12 [b]	2	M8 × 1 [b]	2	$0{,}8^{+1}_{0}$
16	24	36	16	28	12	2,5	M10 × 1,25	3	$1{,}2^{+1}_{0}$
20	32	46	22	36	14	3,2	M12 × 1,25	4	$1{,}5^{+1}_{0}$
25	37	55	24	42	18	4	M16 × 1,5	5	2^{+2}_{0}
32	52	74	36	58	22	4	M20 × 1,5	6	$2{,}5^{+2}_{0}$
40	73	101	54	82	28	5	M24 × 2	10	3^{+2}_{0}
50	—	—	54	82	28	—	M36 × 3	12	3^{+2}_{0}
63	—	—	70	105	35	—	M42 × 3	16	4^{+2}_{0}
70	—	—	70	105	35	—	M48 × 3	18	4^{+2}_{0}
80	—	—	90	130	40	—	M56 × 4	20	$4{,}5^{+2}_{0}$
90	—	—	90	130	40	—	M64 × 4	22	5^{+2}_{0}
110	—	—	120	165	45	—	M80 × 4	25	5^{+2}_{0}
125	—	—	120	165	45	—	M90 × 4	28	6^{+2}_{0}
140	—	—	150	200	50	—	M100 × 4	32	7^{+3}_{0}
160	—	—	180	240	60	—	M125 × 4	36	8^{+3}_{0}
180	—	—	180	240	60	—	M140 × 6	40	9^{+3}_{0}
200	—	—	210	280	70	—	M160 × 6	40	9^{+3}_{0}

NOTE For tolerance values, see ISO 286-2.

a Threads in accordance with ISO 261.

b For long version only.

Dimensions in millimetres



a Spline.

b See Table 3.

Figure 6 — Basic layout of metric involute spline shaft end

Table 9 — Dimensions of metric involute spline shaft ends

Dimensions in millimetres

d_B	L_A min.	L_B	L_S
10	5	1	18
12	6		20
16	8	1,5	25
20	10		28
25	12,5		32
32	16	2	36
40	20		45
50	25		55
60	30		70
70	35	3	80
80	40		90
90	45		105
110	55		125
120	60		135
140	70		155
160	80	5	175
180	90		195
200	100		215

Annex A
(informative)

Examples of methods of sealing between a mounting flange and its housing

In order to achieve a low-pressure, fluid-tight joint between the mounting flange and its housing, one of the following methods can be used.

a) Introduction of a suitable gasket between the flange and housing.

b) Introduction of an O-ring into a suitably machined annular recess in the housing. Spigot lengths allow for, at minimum, the following O-ring cross-selection diameters:

   — 2,65 mm for spigot diameters up to and including 100 mm;

   — 3,55 mm for spigot diameters above 100 mm and up to and including 200 mm.

   It is envisaged that this form of sealing will not be required where the spigot diameter, A, exceeds 200 mm.

c) Introduction of an O-ring in the annular triangular section formed by the flange face, spigot and a suitable chamfer, machined on the corner of the housing mounting face and spigot bore. In this case the O-ring dimensions and other details will be agreed between the supplier and purchaser.

(*Continued from second cover*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 1101[1)] Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out	IS 8000 (Part 1) : 1985 Geometrical tolerancing on technical drawings: Part 1 Tolerancing of form, orientation, location and run-out and appropriate geometrical definitions	Identical with ISO 1101 : 1983
ISO 3912 : 1977 Woodruff keys and keyways	IS 2294 : 1986 Woodruff keys and keyways (*second revision*)	Technically equivalent
ISO 5598 : 1985 Fluid power systems and components — Vocabulary	IS 10416 : 1992 Fluid power systems and components — Vocabulary (*first revision*)	Identical

[1)] To be published (Revision of ISO 1101 : 1983).

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act,* 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. **MGP 14 (389).**

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 2323 0131, 2323 3375, 2323 9402 *Website :* www.bis.org.in

Regional Offices :		*Telephones*
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	2323 7617, 2323 3841
Eastern	: 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi KOLKATA 700 054	2337 8499, 2337 8561, 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	260 3843, 260 9285
Southern	: C. I. T. Campus, IV Cross Road, CHENNAI 600 113	2254 1216, 2254 1442, 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	2832 9295, 2832 7858, 2832 7891, 2832 7892

Branches: AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

Printed at New India Printing Press, Khurja, India